# Oblique Radiography in the Diagnosis of Ankle Injuries

by Nigel Cobb FRCS
*St Mary's Hospital, London*

In the management of an acute ankle injury it is usually at least prudent to arrange for an X-ray examination and most clinicians have a working idea of how the routine exposures are made. The principal information gained from the antero-posterior view is concerned with the integrity of the ankle mortice. As commonly taken, with the foot perpendicular to the X-ray film, there is considerable overlap of the fibular and lateral talar shadows (Fig 1). A much clearer impression of the area may be obtained when the foot is rotated medially by a few degrees until the intermalleolar line is horizontal or parallel with the film (Fig 2). This not only gives an indication of the talar position within its surrounding mortice but it is frequently possible to see clearly through the inferior tibio-fibular joint. The main object of this paper, however, is to draw attention to the antero-posterior oblique position and suggest its importance in the recognition of certain fractures of the medial malleolus. For this position, the foot is further rotated medially to 45 degrees from the film, the tube being centred midway between the malleoli (Fig 3). It produces not only a broad oblique view of the medial malleolus but also far

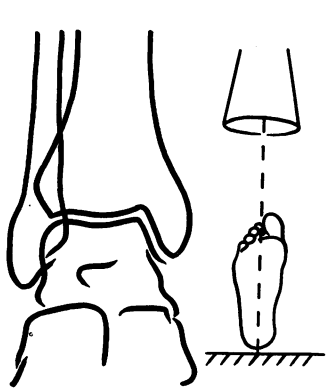

Fig 1 *Antero-posterior position with the foot perpendicular to the film*

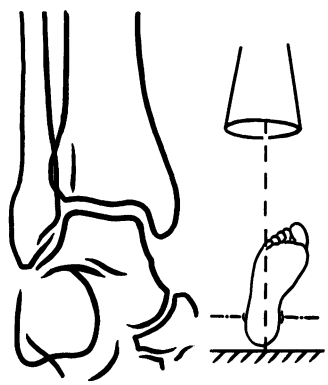

Fig 2 *Antero-posterior position with the intermalleolar line parallel with the film*

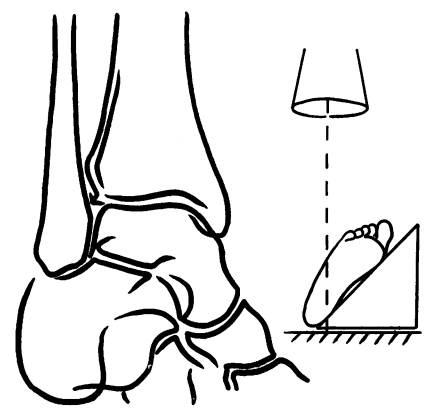

Fig 3 *Antero-posterior oblique position*

Fig 4 **Case 1** *Antero-posterior view showing only a fibular fracture*

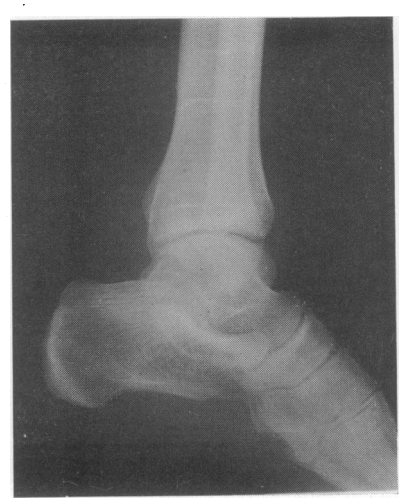

Fig 5 **Case 1** *Lateral view also showing a fibular fracture*

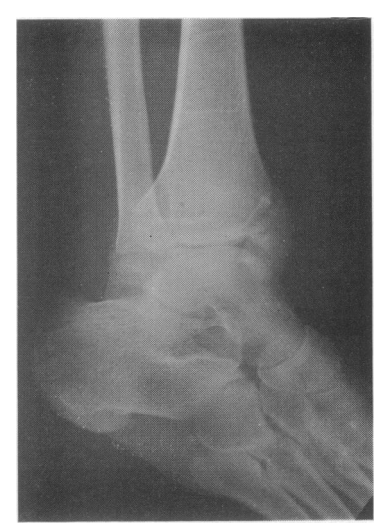

Fig 6 **Case 1** *Antero-posterior oblique view revealing the presence of a tibial fracture*

Fig 7 **Case 2** *Antero-posterior view*

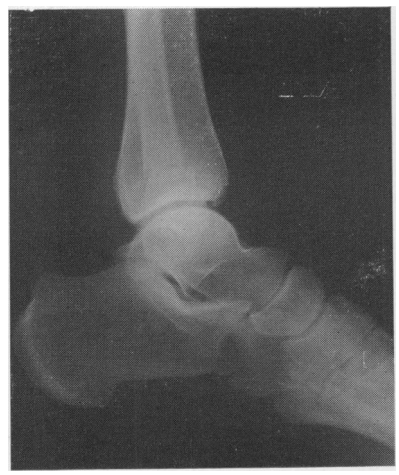

Fig 8 **Case 2** *Lateral view*

Fig 9 **Case 2** *Antero-posterior oblique view*

Fig 10 **Case 3** *Antero-posterior view*

Fig 11 **Case 3** *Antero-posterior oblique view*

Fig 12 **Case 4** *Antero-posterior oblique view*

less overlap of the component structures. Penetration is therefore more even and details of bone architecture the more readily appreciated, particularly in the subtalar region.

*Case Reports*

**Case 1** A man aged 18 injured his left ankle in a motor cycle crash. He was not able to recall details of the accident. The antero-posterior and lateral radiographs showed only a fibular fracture at the joint level and rather suggested a side-swipe type of injury (Figs 4 and 5). An antero-posterior oblique view, however, revealed the presence of a tibial fracture separating off a large medial malleolar fragment (Fig 6).

**Case 2** A man aged 48 was squatting by his motor cycle when it fell on to him, the footrest inflicting a compound fracture of the left lateral malleolus. Routine radiographs showed only that the fibula had been injured (Figs 7, 8) but the antero-posterior oblique radiograph again demonstrated a large medial malleolar detachment (Fig 9).

**Case 3** A parachutist aged 16 landed heavily in the crouched position, rolled forwards and heard a sharp crack as the right ankle fractured. Routine radiographs showed no fracture and he was discharged to seek any further necessary advice nearer his home. Routine antero-posterior (Fig 10) and lateral films taken the next day also failed to show a fracture but

an oblique view revealed a fracture of the medial malleolus (Fig 11).

**Case 4** A woman of 29 injured her right ankle when she fell over a pram. The clinical features suggested a very moderate injury to the ankle but there was tenderness clearly located to the medial malleolus. Only the oblique view showed the fracture (Fig 12).

## Reconstruction of the Anterior Cruciate Ligament by the Method of Kenneth Jones (1963)

by Lieutenant Colonel D J Cowan OBE FRCS RAMC

Extension of the knee-joint through the last 10 degrees can take place only if the anterior cruciate ligament is relaxed by lateral rotation of the lower leg. For the first 10 degrees of flexion of the knee-joint, a corresponding medial rotation of the tibia on the femur is necessary. The next 10 degrees of either flexion or extension is a purely rolling movement. Beyond this range the point of contact on the tibial profile is constant, while that on the femur gradually wanders backwards.

The anterior cruciate ligament has a wide attachment inferiorly to the anterior aspect of the intercondylar area of the tibia and inclines upward, backwards and laterally, invested by a layer of synovial membrane to a fan-shaped superior attachment on the posterior part of the medial surface of the intercondylar notch of the femur. The classical view, stated in many anatomy textbooks, is that the ligament is tight in extension and loose in flexion. Certainly the greatest tension in extension affects the anterior fibres; at the beginning of flexion the anterior fibres relax and the middle fibres are tense. On full flexion the postero-lateral fibres are tense (Fig 1).

Where a meniscus is torn, and the displaced portion of the meniscus prevents the rotational movement of the tibial plateau on the femur, it

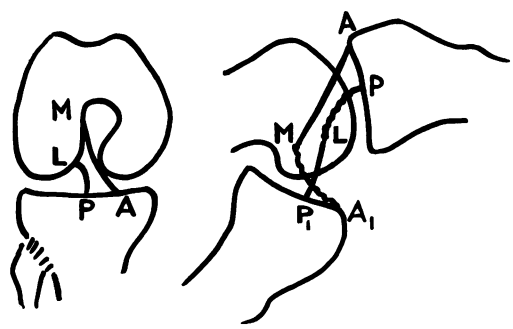


Fig 1 *The normal arrangement of the fibres of the anterior cruciate ligament.* A–M, *antero-medial fibres.* P–L, *postero-lateral fibres*

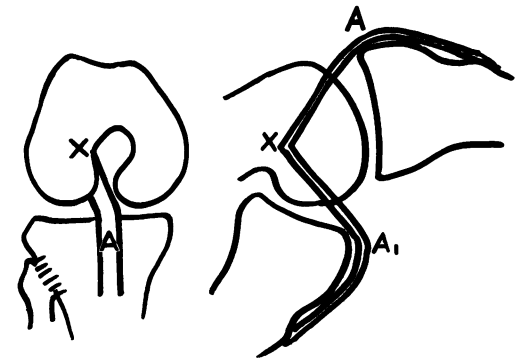


Fig 2 *The reconstructed ligament, from the middle third of the patella ligament, slice of patella and one inch of the quadriceps tendon.* A–X, *reconstructed ligament.* A, *site of entry of ligament into the knee-joint.* X, *situation of drill hole in the lateral femoral notch, through which the ligament leaves the joint*

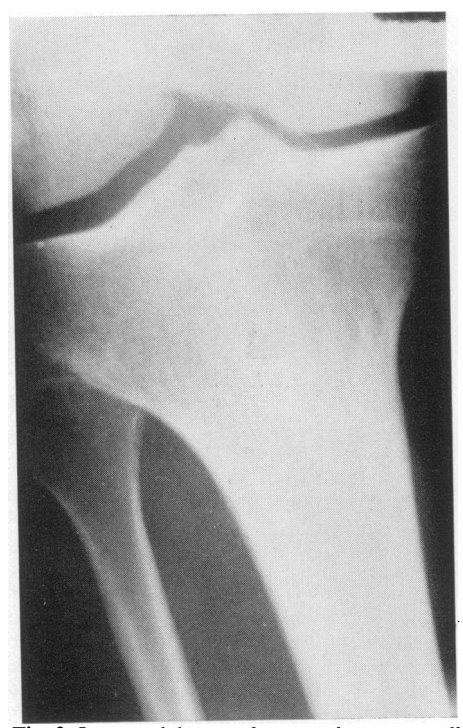

Fig 3 *Intercondylar notch view, showing patella slice projecting into the femoral notch*